

We Claim:

1. A method of estimating a signal-to-interference+noise ratio (SINR), comprising:
  - generating an initial SINR estimate based on a mean of a plurality of samples and a sample variance estimate of the plurality of samples;
  - scaling the initial SINR estimate; and
  - translating the scaled SINR estimate.
2. The method of claim 1, wherein the generating step generates the initial SINR estimate based on at least two sample variance estimates.
3. The method of claim 2, wherein the generating step generates a smoothed sample variance estimate based on the sample variance estimates, and generates the initial estimate based on the smoothed sample variance estimate.
4. The method of claim 3, wherein the generating step generates the smoothed sample variance estimate by combining a current sample variance estimate and a previous sample variance estimate based on a smoothing factor.
5. The method of claim 4, wherein the scaling step scales the initial SINR estimate based on the smoothing factor.
6. The method of claim 5, wherein the generating step generates the smoothed sample variance estimate according to the following expression:

$$\hat{\sigma}_k^2 = (1 - r)\hat{\sigma}_{k-1}^2 + rS_k^2$$

where  $\hat{\sigma}_k^2$  = current smoothed sample variance estimate,

$\hat{\sigma}_{k-1}^2$  = previous smoothed sample variance estimate,

$S_k^2$  = current sample variance estimate, and

*r* = smoothing factor.

7. The method of claim 5, wherein the scaling step scales the initial SINR estimate based on the following expression:

$$\tilde{\Theta} = \frac{\eta - 2}{\eta} \hat{\Theta}$$

where  $\tilde{\Theta}$  = scaled SINR estimate,

$\hat{\Theta}$  = initial SINR estimate, and

$$\eta = \frac{(N - 1)(2 - r)}{r} \text{ where } N = \text{a number of the plurality of samples.}$$

8. The method of claim 7, wherein the translating step translates the scaled SINR estimate based on the number of the plurality of samples.

9. The method of claim 8, wherein the translating step translates the scaled SINR estimate by adding  $(-1/N)$ , where  $N$  is the number of the plurality of samples.

10. The method of claim 4, wherein the scaling step scales the initial SINR estimate based on a number  $N$  of the plurality of samples.

11. The method of claim 1, wherein the translating step translates the scaled SINR estimate based on the number of the plurality of samples.

12. The method of claim 11, wherein the translating step translates the scaled SINR estimate by adding  $(-1/N)$ , where  $N$  is the number of the plurality of samples.

13. The method of claim 1, wherein the plurality of samples are pilot symbol samples.

14. The method of claim 1, wherein the plurality of samples are data symbol samples.

15. A method of estimating a signal-to-interference+noise ratio (SINR), comprising:  
generating a first initial SINR estimate based on a mean of a plurality of pilot symbol samples and an sample variance estimate of the plurality of pilot symbol samples;  
scaling the first initial SINR estimate;  
translating the first scaled SINR estimate;  
generating a second initial SINR estimate based on a mean of a plurality of data symbol samples and an sample variance estimate of the plurality of data symbol samples;  
scaling the second initial SINR estimate;  
translating the second scaled SINR estimate; and  
combining the first and second scaled estimates to produce a composite SINR estimate.

16. The method of claim 15, wherein the combining step weights the first and second scaled estimates and combines the weighted first and second scaled estimates to produce the composite SINR estimate.

17. The method of claim 15, wherein the weights are determined based on a bias in the first and second scaled estimates, respectively.

18. A method of estimating a signal-to-interference+noise ratio (SINR), comprising:  
generating a first SINR estimate based on received pilot symbol samples;  
generating a second SINR estimate based on received data symbol samples; and  
combining the first and second SINR estimates to produce a composite SINR estimate.

19. The method of claim 18, wherein the combining step comprises:  
weighting the first SINR estimate according to a first weight;  
weighting the second SINR estimate according to a second weight; and  
combining the first and second weighted SINR estimates.

20. The method of claim 19, wherein the first and second weights sum to unity.
21. The method of claim 19, wherein the first and second weights do not sum to unity.
22. The method of claim 19, wherein the first and second weights depend on an initial estimate of the SINR.
23. The method of claim 19, wherein the first weight depends on a bias and variance of the first SINR estimate and the second weight depends on a bias and variance of the second SINR estimate.
24. The method of claim 19, wherein
  - the generating the first SINR estimate step includes,
    - generating a first initial SINR estimate based on a mean of a plurality of pilot symbol samples and a sample variance estimate of the plurality of pilot symbol samples,
    - scaling the first initial SINR estimate, and
    - translating the first scaled SINR estimate; and
  - the generating the second SINR estimate step includes,
    - generating a second initial SINR estimate based on a mean of a plurality of data symbol samples and a sample variance estimate of the plurality of data symbol samples,
    - scaling the second initial SINR estimate, and
    - translating the second scaled SINR estimate.